

REMARKS

The Examiner is thanked for the very thorough and professional Office Action. Pursuant to that Office Action, Claims 1, 5 and 9 have been amended. Support for the amendment of Claim 1 can be found in the Specification on page 2, last paragraph, page 3, third paragraph, and page 8, next to the last paragraph on that page. In addition, the Abstract has been rewritten. The present amendment is deemed not to introduce new matter. Claims 1-10 remain in the application.

Reconsideration is respectfully requested of the rejection of Claim 9 under 35 U.S.C. § 112, second paragraph, as being indefinite in the recitation of "Aldrich". This term has been deleted from both Claims 5 and 9 and it is therefore believed that neither of these claims is subject to the rejection. Withdrawal of the rejection is accordingly respectfully requested.

Reconsideration is respectfully requested of the rejection of Claim 1 under 35 U.S.C. § 103(a) as being unpatentable over Fessenden in view of Sayo, et al. and Carstairs, et al.

It has been conventional to treat cut flowers by using a dehydration step followed by a permeation step and a drying step. Cut flowers so treated are often packed in a basket or the like together with leaves for offering as merchandise. The leaves packed with cut flowers are generally thicker than petals on the flowers and their nerves act as barriers to dehydration and permeation.. Consequently, depending upon the leaf property (thickness, hardness, color and the like) of leaves, it can happen that the dehydration cannot be achieved perfectly, and the chlorophyll cannot be dissolved out sufficiently. This poses a problem that the color in the leaves cannot be perfectly removed or preserved. Therefore, it is desirable to treat the leaves using a dehydration process that more perfectly preserves the color of the plants (Specification, page 2, paragraph 4).

The inventors studied intensively the properties of a number of candidate solvents to be used with acetone which is conventionally used as a dehydrating solvent. As a result of these studies, the inventors unexpectedly found a solvent excellent in the permeation in the dehydration step and which is also capable of dissolving out chlorophyll and is compatible with the permeation solution. This discovery made it possible to achieve an object of the invention to provide a treatment method for preservation of plant leaves (Specification, page 2, paragraph bridging pages 2 and 3).

The present inventors found that when acetone is used as the dehydration solvent with leaves, it may be insufficient in permeability as a dehydrating solvent since leaves are thicker than petals of flowers, and also the leaves have veins functioning as barriers (Specification, page 3, paragraph 3). It was further discovered that (1) ethyl alcohol is equivalent to acetone in dehydration capability and is higher in permeability than acetone, and (2) that a mixture consisting of ethyl alcohol and acetone efficiently dehydrates leaves (Specification, page 3, next to the last paragraph). Consequently, Claim 1 herein has been amended to state that plant leaves are immersed in a dehydrating solvent to dissolve out chlorophyll and replace the tissue water of the leaves by the dehydrating solvent. The dehydrating solvent required by Claim 1 is a mixture consisting of acetone and ethyl alcohol.

In contrast, in the first treatment stage 1 of the Fessenden treatment process, the natural colors are stabilized by immersing the plant tissues in a color stabilizing and preserving solution containing such ingredients as butyl alcohol, thiouria, boric acid, and ions of sodium, phosphate and borate. This stabilizing process is carried out prior to the hydration treatment to insure that the colors to be subjected to further treatments can be substantially left as they are.

In contradistinction, in the present invention, the natural colors in the leaves are to be treated

with a solvent which will remove not only tissue water in the leaves but also the chlorophyll which lends color to the leaves. Therefore, it can be seen that the Examiner's primary reference of Fessenden discloses a process to stabilize the color of the leaves of a plant, whereas, in the present invention, the tissue liquid and also the coloring matter in the leaves is removed.

The secondary reference of Carstairs, et al. also discloses a process to prevent, as far as possible, the natural green color of leaves from leaching out and to preserve the natural color of the plant. Carstairs, et al. propose to preserve plant material by immersing plant material in an aqueous solution comprising 40-95% by volume of one or more dihydric alcohol such as propylene glycol at elevated temperatures of from 40-95° to achieve preservation of the plant material without curling or distorting the plant material. It is thus apparent that no attempt is made in either Carstairs, et al. or Fessenden to remove the coloring materials from leaves during a dehydration step.

The Examiner's other secondary reference of Sayo, et al. relates to a method for producing metal particles or a carrier of metal particles, which is in a field quite different from the present invention. Therefore, it is respectfully submitted that the disclosure of Sayo, et al. does not relate to the subject matter of the present invention.

In view of the foregoing, it is respectfully submitted that none of the Examiner's references, taken individually or in combination, disclose or suggest a treatment for preservation of leaves of a plant wherein a dehydrating solution comprising a mixture of acetone and ethyl alcohol is first used to replace the tissue water of the leaves by the dehydrating solvent and also to dissolve out chlorophyll. Thereafter, according to the present invention, the leaves are immersed in a permeating solution containing polyethylene glycol and acetone for allowing the polyethylene glycol to

substitute in place of the tissue water with an intention to dye the leaves with a coloring matter.

In order for a combination of references to render an invention obvious, it must be obvious that their teachings can be combined. In re Avery, 186 USPQ 161 (CCPA, 1975). Obviousness cannot be established by establishing the teachings of the prior art to produce the claimed invention, absent some teaching, suggestion, or incentive supporting the combination. In re Geiger, 2 USPQ 2d, 1276 (CAFC, 1987), and In re Fine, 5 USPQ 2d, 1596 (CAFC, 1988).

In the present case, there is no teaching, suggestion or incentive supporting the Examiner's combination of references. Moreover, even if these references are combined in the manner suggested by the Examiner, one skilled in the art would not arrive at the invention as now called for in the claims herein. Consequently, it is respectfully submitted that the rejection fails, as a matter of law, in view of the above authorities. For this reason, it is respectfully submitted that the Examiner would be justified in no longer maintaining the rejection. Withdrawal of the rejection is accordingly respectfully requested.

Reconsideration is respectfully requested of the rejection of Claim 2-10 under 35 U.S.C. § 103(a) as being unpatentable over Fessenden in view of Sayo, et al. and Carstairs, et al. as applied against Claim 1, as above, and further in view of Dokkestul, et al.

The Fessenden, Sayo and Carstairs, et al. references are discussed above.

Dokkestul, et al. relates to a method of coloring a plant using a coloring matter, and is characterized in that a coloring matter is added to an ethylene glycol aqueous solution in which a plant is immersed. The ethylene glycol is used as a moisture preserving means and also the coloring matter-carrying means.

However, there is no disclosure whatever in Dokkestul, et al., or in any of the references of first treating plant leaves with a mixture containing acetone and ethyl alcohol to replace the tissue water of the leaves with the dehydrating solvent and also dissolve out the chlorophyll, thereby allowing uniform dyeing of the leaves in a subsequent permeation process using the polyethylene glycol as the permeation solvent. On the contrary, that teaching or suggestion comes only from the present application, and constitutes an important element or aspect of the present invention.

Moreover, it is respectfully submitted that there is no teaching, suggestion or incentive supporting the combination of references as suggested by the Examiner. Further, even if the references are combined in the manner suggested by the Examiner, one skilled in the art would not be led to carrying out a first step of dehydrating the plant leaves with a mixture comprising acetone and ethyl alcohol to replace the tissue water of the leaves with a dehydrating solvent and also to dissolve out the coloring material, i.e., the chlorophyll in the leaves, thereby to achieve a more even dying in a subsequent step. For these reasons, it is respectfully submitted that the Examiner's combination of references fails, as a matter of law, in view of the above cited authorities. Consequently, the Examiner would be justified in no longer maintaining this rejection. Withdrawal of the rejection is accordingly requested.

In view of the foregoing, it is respectfully submitted that the application is now in condition for allowance and early action and allowance thereof is accordingly respectfully requested. In the event there is any reason why the application cannot be allowed at the present time, it is respectfully requested that the Examiner contact the undersigned at the number listed below to resolve any problems.

Respectfully submitted

TOWNSEND & BANTA



Donald E. Townsend
Reg. No. 22,069

Date: April 8, 2004

TOWNSEND & BANTA
601 Pennsylvania Ave., N.W.
Suite 900, South Building
Washington, D.C. 20004
(202) 220-3124